TEMA TELECOMUNICAZIONI S.r.l.

Telecommunications - Electronics

DIAL-103A

GSM Gateway Voice Interface for analog trunk interface of PBX (FXS)

TECHNICAL – INSTALLATION MANUAL

DIAL-103A Version HW 1.00 FW 2.04

Made in Italy by TEMA TELECOMUNICAZIONI S.r.l.

Recommendations

1. Use only original spare parts and consumables supplied by Tema Telecomunicazioni Srl for this equipment. The company shall not be held responsible for any damage caused by the use of materials that they have not supplied.
2. The device has been carefully manufactured and tested. In any case, the product is not recommended for use in situations in which incorrect operating may result in damage to persons and/or property.
3. We recommend that you carefully read all this manual before starting to use the device.
4. Do not expose the device to sunlight and protect it from sources of heat, dust, humidity and chemical agents.
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Revision	Date	Revision reason	Prepared	Checked/Approved
3	19/05/2010	Update	GBC	DP

DICHIARAZIONE DI CONFORMITÀ CE

DECLARATION OF CONFORMITY CE

La sottoscritta società con sede in	**TEMA TELECOMUNICAZIONI SRL** Via C. Girardengo, 1/4 - 20161 MILANO
dichiara che il prodotto	**Interfaccia GSM Gateway voce – GSM Gateway**
Codici	**DIAL-103 nelle versioni A, T**

è stato costruito in conformità alle seguenti normative:

SICUREZZA	EN 60950-1
EMC	EN 55022 EN 55024 EN 61000-6-1 EN 61000-6-3
RADIO	ETSI EN 301 511 V.9.0.2 Radio Spectrum - Global System for Mobile Communications GSM900/1800 ETSI EN 300 607-1 Digital Cellular telecommunications system ETSI EN 301 419-1, ETSI 300 342 Radio equipment and systems EN 301 489-1 V1.6.1, EN 301 489-7 V1.3.1
TERMINALE DI TELECOMUNICAZIONE	TBR 21 (1998) – Terminal Equipment (TE); Attachment requirements for pan-European approval for connection to the analogue Public Switched Telephone Networks (PSTNs) of TE (excluding TE supporting the voice telephony service) in which network addressing, if provided, is by means of Dual Tone Multi Frequency (DTMF) signalling.

Inoltre il prodotto sopra menzionato soddisfa i requisiti essenziali delle seguenti direttive:

- Direttiva LVD 73/23/EEC (Low Voltage Directive)
- Direttiva EMC 89/336/EEC – 92/31/ECC
- Direttiva 99/05/EC per apparati di Radio e Telecomunicazioni

MILANO, 21 Gennaio 2009

TEMA TELECOMUNICAZIONI SRL
Felice Lamanna
Amministratore

I. IMPORTANT INFORMATIONS REGARDING THE RECOVERY AND RECYCLING OF THIS ELECTRONIC DEVICE

The crossed-out wheeled bin symbol below indicates that this electronic equipment is intended to be disposed in a separate collection and not in an unsorted municipal waste, in order to provide for the treatment of WEEE (Waste Electrical and Electronic Equipment) using best available recovery and recycling techniques.
Specific treatment for WEEE is indispensable in order to avoid the dispersion of pollutants and other hazardous substances into the waste stream, while recycling leads to reduction of disposal of waste and the negative impacts on environment and human health. That is, priority is given to reuse of WEEE in its components, subassemblies and consumables.
As the final holder, the user has an important role in contributing to reuse, recycling and other forms of recovery of WEEE and is responsible to return this waste in the collection facilities set up by EC Member Stases and to fulfill other duties in compliance with Directive 2002/96/EC and local laws.

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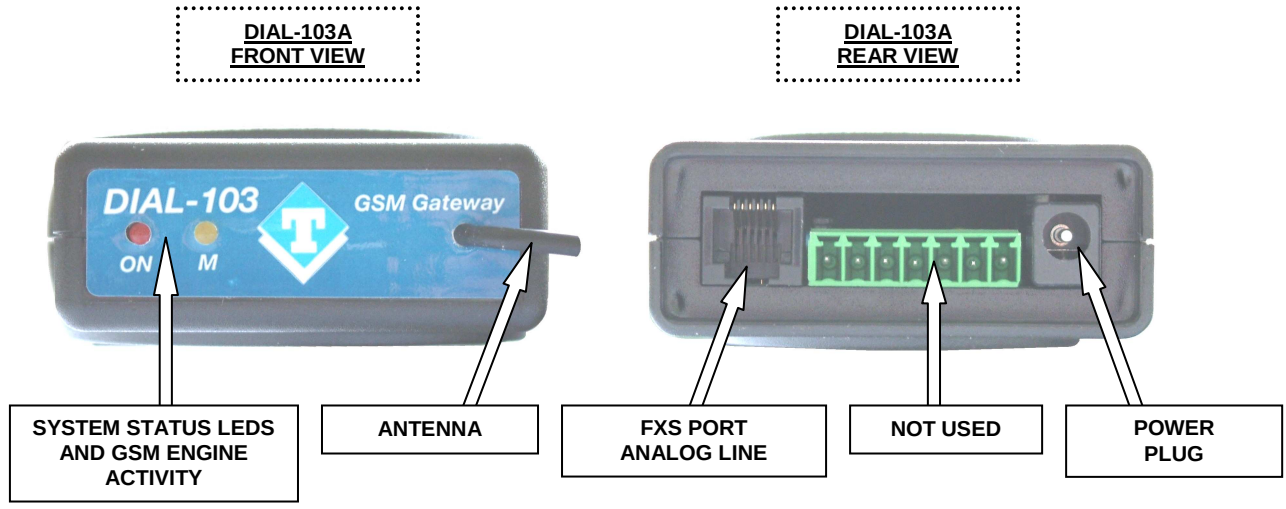
1. INTRODUCTION OF THE DIAL-103A GATEWAY

DIAL-103A is a device that redirects voice telephone calls over the GSM network allowing a significant reduction in the cost of calls to mobile phones by, for example, negotiating corporate contracts.

The unit is equipped with an FXS port (LINE connector) for connection to an analog trunk interface of the PBX or, alternatively, to a standard DTMF telephone. When DIAL-103A is connected to an analog trunk interface of the telephone exchange, it allows routing calls to mobile phones via a built-in GSM module: the greatest savings are achieved by performing this task. For incoming calls, i.e. for calls to the SIM number of the built-in GSM module, DIAL-103A forwards the call downstream the PBX.

DIAL-103A installation is extremely simple and requires no particular skills. In fact, after inserting the SIM card, connect the unit to a PBX analog trunk interface and plug in the antenna and power supply cable: DIAL-103A is now ready to use. Moreover, the unit is provided with a set of LED to ease recognition of the system and GSM link's status. It is also possible to determine if the registering may be in roaming, therefore with a different operator other than the owner of the SIM Card, or not (field 292, default roaming enabled).

DIAL-103A parameters can be programmed using DTMF tones. This password-protected function is available locally via the system-regenerated line, via remote calls from the GSM network and even via SMS messages.



2. DIAL-103A CHARACTERISTICS

DIAL-103A main features are:

- Built-in dual-band (900/1800 MHz) GSM module
- High audio quality
- Plug & Play installation
- Programming via DTMF tones
- Programming via SMS
- Regulation of the voice communication volume
- 2-wire line interface with RJ-11 jacks
- Visual indicators: LED indicator of the system operating status
  LED indicator of the built-in GSM module operating status
- Compact size
- GSM signal strength reading via DTMF commands (tones)

Services for outbound calls (converted from the wired line to the GSM network):

DIAL-103A allows making calls directed to mobile phones using the GSM network, which is more cost-effective than calling from a wired line. Moreover:

- Call by call conversation timeout with time recharge option
- Table for inhibiting outbound calls to unwanted numbers
- Possibility of SIM identity hiding to the called number
- Accepts DTMF tone and pulse dialing (to support older PBXs)
- Access to the module for local programming via DTMF
- Access to the module to know GSM signal strength via DTMF commands

Services for inbound calls (converted from GSM to wired line):

DIAL-103A receives calls from the GSM network and reroutes them to the PBX (or telephone) in wired line analog mode. Moreover:

- Possibility of rejecting all incoming calls
- Table for inhibiting unwanted callers (rejecting particular incoming calls)
- Sending the caller-ID (CLI) to the downstream device
- Differentiated ring based on recognition of the calling number from a configurable table
- No timeout on incoming calls
- Access to the remote programming via DTMF
- Remote programming via SMS

3. PARTS COMPRISING THE SYSTEM (PACKING LIST)

DIAL-103A system consists of the following parts:

- A DIAL-103A device with GSM antenna (2.5 mt of cable not detachable)
- An external power supply with $12V_{DC}$ – 500mA output
- A PLUG/PLUG RJ-11 telephone cord and this manual

4. TECHNICAL SPECIFICATIONS

GSM section

GSM Module	Built-in, Dual-Band (900/1800 MHz)
Type of GSM network	GSM Phase II
SIM Card	Plug-in, 1.8V or 3V, small
Transmission power	Max. 2W / 900MHz - 1W / 1800MHz
Receiver sensitivity	> -100dBm
Antenna	50Ω impedance, 2 W
Antenna cable length	2.5 mt, bundled

Telephone FXS interface section

RJ-11 telephone connection	For connecting an analog trunk interface of the PBX, or directly to an analog telephone set (BCA)
AC impedance in off hook	600Ω
Analog line voltage in stand-by	$48V_{DC}$
Analog line current with engagement	25mA max.
Max. line loop resistance	800Ω
Call signal generator (ring)	65 V_{RMS}, 25Hz 40 V_{RMS}, 25Hz, 3 REN (400Ω)
Dial tone	425Hz
Analog FXS line dialing	DTMF + PULSE

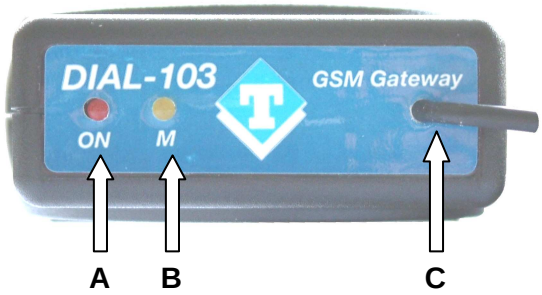
General

Power supply	Power supply adapter provided Input 220 V_{AC}, 50Hz - Output 12 V_{DC}, 500mA
Operating temperature	0°C to 45°C
Relative humidity	95% non-condensing
Dimensions	H30 x W75 x D137 mm
Weight	About 190 gr., with antenna, without power supply

5. DEVICE DESCRIPTION

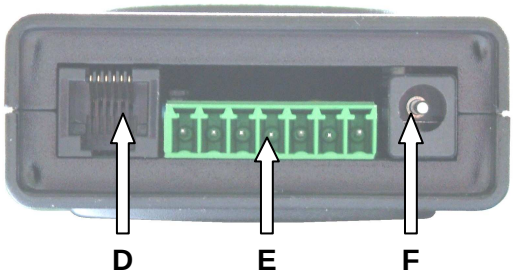
5.1. Front and rear views

DIAL-103A front panel is provided with



A = System status LED “ON”
B = GSM module status LED “M”
C = Antenna cable. Place the antenna at the point of best reception, monitoring performance on the signal level with the DIAL-103A provided function.

DIAL-103A rear panel is provided with



D = RJ-11 connector for a PBX trunk line interface or an analog telephone, pin 1-2-5-6 NC not connected, pin **3-4** connection for a PBX trunk line interface or an analog telephone.
E = “In / Out” connector contacts, not used.
F = Power plug, positive polarity on central pin.

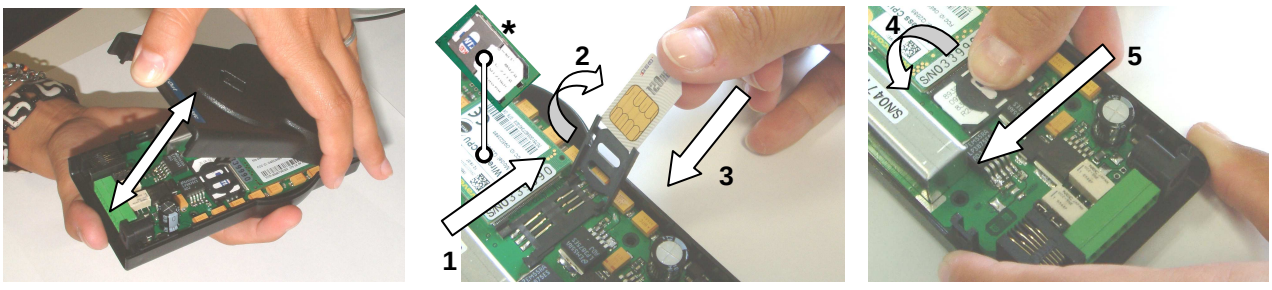
6. INSTALLATION AND DIAGNOSTICS

6.1. Installation of the DIAL-103A unit

DIAL-103A has a GSM module that requires a SIM card from the selected telephone operator to work. In addition to resting on table, a desktop or shelf, the DIAL-103A unit can be vertically wall-mounted.

To do that, proceed as follows:

- Attach the DIAL-103A to the wall in the required position.
  Place the antenna at the point of best reception, completely extending the cable for its total length. To avoid damaging the DIAL-103A device or the SIM card, make sure that the unit is disconnected from power supply and from the RJ-11 connector before inserting or removing the SIM card. To insert the SIM card into DIAL-103A, it must be opened making power on the back to “book-open” the two plastic shells (will hinge on the front label). Insert the SIM card in his slide connector with the gold contacts that are facing down into the SIM card’s compartment. Note that there is only one correct way to place the SIM in the holder. Please do not force.
  NOTE: in some versions, the SIM Card (*) must be directly inserted into the SIM holder of the GSM module itself (sliding insertion / extraction, that SIM holder is not a shell opening type).



Warning: to avoid damaging the DIAL-103A or the SIM card, make sure that the unit is disconnected from power supply and from the RJ-11 connector before inserting or removing the SIM card.
Important tips for proper operation We recommend to disable the PIN code request, voice mail, all call diversions (such as when busy, absent or not available) and call notifications on the SIM card before inserting the SIM in the DIAL-103A, using a normal GSM device with keypad.

- Connect a PBX analog trunk (or a normal analog telephone device) port to the RJ-11 connector.
- Connect the power supply cord.

The built-in GSM module will then start registration with the GSM network, a phase indicated by the red "On" LED. Place the antenna at the point of best reception and, following the instruction on chap. 8.2.1, monitor performance on the signal level. Signal level should be at least 60% to ensure good system operation.

6.2. Operational and diagnostic indicators

When DIAL-103A is connected and powered, the LEDs signal the status of the system in a simple, effective manner.

6.2.1. Operational indicators

Make sure that the GSM signal strength is good. Under these conditions, when you pick up the handset connected downstream or engage the PBX line, you will hear the typical analog-line dial tone. In the case of a SIM blocked by a PIN code request, or not inserted, failed or not yet registered with the GSM network or other cases that prevent normal operation, you will hear a tone indicating unavailability.

6.2.2. Diagnostics

On power-up, the red LED “On” flashes quickly. After registration, also the red “On” LED will flash slowly. This is the condition of the unit in stand-by mode (no calls in progress). The engagement of the telephone line, and hence the activity status of the module, is signaled by the red “On” LED that remains lit for the entire duration of the conversation. When programming the unit remotely or by a downstream telephone, this status is indicated by the fast flashing of the “On” LED, indicating the normal operation of the GSM unit. Verify the GSM signal strength following the procedure described in chap. 8.2.1. If the level is low, it will be necessary to find a better position for the antenna so that it can provide a stronger and more stable signal. There is no rule for positioning the antenna since an appropriate position depends on the intensity of the operator's field in the area and other factors related to the shielding of the radio waves by walls/buildings. Anyway, the best is to find the maximum receipt of signal. Abnormal conditions, or temporary inactivity periods are signaled by the fast flashing of the red “On” LED. The gateway is ready to be used when connected to the analog line and when the registration to GSM network has been made. Make an incoming and an outgoing call to check communications in both ways.
During normal use, it is possible that the user may experience the echo effect on the conversation. This effect happens seldom and in a not systematic way, depending on the condition of the GSM link that carries the communication. However, should echo happen continuously, refer to appendix A1 in order to follow the echo cancellation instructions.

7. SERVICES

7.1. Outbound Call Gateway

In its basic function, outbound calls can be made through the integral GSM module, from the telephone or the PBX wired line port connected to DIAL-103A, thus transforming a wired network call into a GSM call.

If the PBX is provided with advanced routing functionality (LCR - Least Cost Routing) it is possible to configure the relevant table (ARS - Automatic Route Select table) in a way that DIAL-103A is chosen as the default output line for calls directed to one or more mobile GSM numbers, depending on their prefixes.
If the PBX is not provided with LCR, it is still possible to select DIAL-103A when a GSM mobile number is dialed by setting the selection code of the trunk interface the Gateway is connected to, and dialing this code before the GSM number to call. Refer to your PBX documentation for further info.

By picking the phone’s handset or engaging the PBX trunk line, the DIAL-103A provides the dial tone of a normal analog line. Therefore, the telephone number to call should be dialed within a configurable dialing time (field 221, default 30 sec).
DIAL-103A has to collect all the digits of the number to call before making the call through its built-in GSM module (as with a normal GSM mobile phone) and it uses a configurable timeout (field 220, default 4 sec) to do this. So, after the last digit is entered, the call to the GSM network is generated after 4 seconds.
It is possible to speed-up the call by simply pressing the # (pound) key at the end of the number to be called, to let DIAL-103A know that it can send the GSM call immediately. It is also possible to determine that the call will be generated after DIAL-103A has collected a predetermined number of digits (field 271, default disabled). This feature has the advantage of not having to enter additional digits to the dialed number and not having to wait for the time-out selection; when this function is enabled, keep in mind that you can not make calls to numbers that have a longer number of digits set in the 271 field.

After sending the GSM call, DIAL-103A connects the voice path to allow the caller to hear the progress of the call (ringing, busy, etc.). When the called person answers, a timer (field 235) controls the maximum allowable call duration. If a timeout has been programmed, one minute before it expires, a tone warns the user that the

call is about to be terminated. The caller may reset the timer for an additional amount of time (field 245) to prevent the call from being terminated. So, when you hear the warning (one tone every 5 seconds), you can press the communication timer reset code (field 240, default "*1").

The SIM identity in the built-in GSM module can be simply masked by programming the appropriate field (field 260).

Note: regardless of the system programming, the GSM network allows users to forward/hide the user identity CLI by way of universal special codes foregoing the GSM number. These codes are:

CLI FORCED FORWARDING	***31#**	**+**	**GSM NUMBER**
CLI FORCED HIDING	**#31#**	**+**	**GSM NUMBER**

7.1.1. Inhibited number table

Some numbers, area codes or parts of numbers stored in a table (fields 250-259) can be inhibited so that DIAL-103A will not make calls to these numbers. For example, by entering "06" all calls to the Rome wired line network will be inhibited, while by entering "02615441", calls to that complete number will be inhibited. Entering "144" blocks calls to service centers. This function is useful for blocking calls to the wired network (not cost-effective from GSM) or unwanted calls, if the downstream PBX doesn't have an ARS function or when only one telephone is connected to DIAL-103A.

7.1.2. Decadic (pulse) dialing detection

In order to adapt to old PBXs that don't have DTMF dialing capability, and only when expressly enabled (field 272), DIAL-103A also accepts pulse dialing.

7.1.3. Access to the module for Local Programming via DTMF

Parameters can be programmed by engaging DIAL-103A's line with a downstream telephone or by using the PBX's trunk interface. For changing the parameters set, refer to the relevant section.

7.2. Inbound Call Gateway

In basic operating mode, when DIAL-103A receives a call to the built-in GSM module, it regenerates the ring by sending the call current over the analog line; if a caller-ID has been received, DIAL-103A resends it in Bell202 or CCITT V.23 mode, 1200-baud FSK modulation, to the downstream telephone or PBX. Communication is established when the call is answered. There is no timeout on inbound calls.

By programming the appropriate field (field 215), it is possible to ignore all incoming calls (the built-in GSM module rejects them). This function is useful for keeping the system available only for outbound calls.
Note: This configuration has the disadvantage of preventing programming by remote calls.

7.2.1. Differentiated rings

DIAL-103A sends a differentiated ring to the downstream telephone (field 210). It is possible to set an outside line ring (1-sec. ring – 4-sec. pause) or an outside line fast ring (1-sec. ring – 2-sec. pause) based on the CLI of the calling number in the table (fields 505-554): if the number is recognized, it will be a fast "caller recognized" ring, otherwise it will be a trunk line ring indicating an "unknown caller." This function is especially useful when DIAL-103A is connected to a normal telephone instead of a PBX.

7.2.2. Inhibited number Table for inbound calls

Similarly to outbound calls, an incoming call table (fields 280-289) can be created to inhibit certain callers or area codes. When DIAL-103A receives an inhibited call, it automatically rejects it.

7.2.3. Access to the module for remote programming via GSM

Call DIAL-103A at the number of its SIM card, wait for someone to answer the line downstream and within the first 30 seconds of conversation, key ### (3 pound signs) + one of the Passwords enabling the selected function (Alarm Management, Relay Management or Parameter Programming).
If there is no downstream operator to answer, it is possible to set DIAL-103A to automatically answer a GSM call by setting the appropriate parameter (field 270).

7.2.4. Access to the module for remote programming via SMS

Send an appropriately formatted SMS (see chap. 8.4) to the SIM number of the built-in GSM module. Wait for DIAL-103A to send back a confirmation SMS, indicating that programming has been performed.

8. PARAMETER PROGRAMMING

DIAL-103A is equipped with an integral non-volatile memory, whose structure can be shown in a table where programming data should be entered.

8.1. Programming Modes

A simple call to the system allows access to many of the functions offered as well as parameter programming. Anyway the system can be programmed also locally. The functions that can be enabled are the following:

- Access to system programming
- Resetting the system's default parameter settings

These functions require entry of the relevant password.

Note: **Each access password can be typed "concealed" in the sense that the system will recognize it even if preceded by a series of deliberately wrong DTMF characters.** DIAL-103A waits for a password to be entered correctly and, if this occurs, emits a long password recognition beep.

8.2. Local programming

This function allows updating DIAL-103A's data tables for configuring its operating mode. The Gateway answers back with different tones depending on which operation has been made, in order to ease the programming. Basically these tones are:

- **1 long tone : confirm data entering or password accepted, it is a confirming tone**
- **1 short tone : confirm field selection**
- **2 short tones : confirm value selection**
- **3 short tones : error notice or confirm of just inserted data removal**

Connect an analog telephone directly to the LINE connector or to the trunk interface of the PBX to which DIAL-103A is connected.

- Key **###** and, after the confirmation tone, key the password for the parameters, **1111** by default.
- Wait for the confirmation tone that indicates password accepted and access to programming mode

Thus, if the entered password is correct, you will hear the begin of programming confirmation tone: the field to program and the value to be set may be selected dialing the appropriate number with the phone keypad, and then # (pound key) to confirm the choice or * (asterisk key) to cancel selection.

For example, to set the "Ring type" parameter you must dial **210** and **#** to confirm the choice: the system will announce, with the short confirm field selection tone, that the field has been selected.

Note: the field number entered must always be three digits. If an invalid field number were entered, the system would play the 3 short tones of error signaling.

Then it is possible to set the value of the field, entering the appropriate digit (digit 0, in this example of parameter 210, to set the fast ringing mode): the system will confirm the value selection with the 2 short confirm value selection tones (200 msec).

If the data entered are correct, press # to confirm the choice: the system will confirm the entry with the 2 short confirm value selection tones. If you wish to empty a field, do not enter any value and, after the single-beep press # to obtain the long confirmation beep (200 msec).

It is possible to quit programming by simply hanging up or changing other parameters by following the procedure just described. DIAL-103A waits 3 seconds from the last DTMF digit entered before confirming the entered value: that is entering a new value the user must dial within this timeslot.

In the event that you have reached the limit of the data area provided for the field in programmation, this time value is canceled in order to speed up programming. For example, if the parameter is 1 digit long, DIAL-103A confirms the value entered after receiving one DTMF digit. If the parameter is 3-digit long and the user enters only 2 digits, DIAL-103A will confirm the entry 3 seconds after the user entered the second digit; when 3 digits are entered, the entry is confirmed immediately after receipt of the third digit to signal that the field is full and, at the same time, speed up programming. The parameters entered will be stored. During programming no call can be made.

Note: when no digit is keyed for at least 30 seconds, the unit automatically exits programming mode.

8.2.1. Monitoring the GSM signal strength

It is possible to know the GSM signal strength revealed by DIAL-103A proceeding as follows:

- Connect a PBX analog trunk (or a normal analog telephone device) port to the RJ-11 connector.
- Key ### and, after the confirmation tone, key the password for the parameters, **1111** by default.
- Wait for the confirmation tone that indicates password accepted and access to programming mode
- Key the special code **003#** and count the number of short tones that DIAL-103A emits. At the end of the short tones emission, DIAL103A will emit a long tone. The GSM signal strength depends on the number of emitted tones, as described as follows:

    - 1 tone = minus of 10%
    - 2 tones = circa 20%
    - 3 tones = circa 30%
    - 4 tones = circa 40%
    - 5 tones = circa 50%
    - 6 tones = circa 60%
    - 7 tones = circa 70%
    - 8 tones = circa 80%
    - 9 tones = more than 90%
    - Other segnalation = absent signal

At the end of the earing, hang up the phone and repeat the above steps to get another signal reading.

8.3. Remote programming

This function allows updating DIAL-103A data tables for configuring its operating mode. It is programmed in the same way as local programming.

- Call the SIM number of the DIAL-103A GSM module.
- If the downstream operator answers, press ### and password **1111**, as in the case of local programming. The operator will be excluded and it is possible to proceed to programming.
- If no response is received from the operator, DIAL-103A will automatically answer the GSM call after a programmable delay and, when you hear a long tone, the DIAL-103A is ready to receive the password. This avoids having to key the three beginning pound signs.

8.4. Programming via SMS

To program in this way, just write a message by constructing the necessary elementary fields. The concept is similar to programming by telephone, i.e., you need to enter the valid programming password, indicate the field to change and the value to enter and delimit the elementary information with exclamation points.

Format of valid SMS must be as following:

1. **Programming password**
2. **Exclamation mark**
3. **Field to set followed by its value**
4. **Exclamation mark**

For faster programming, it is possible to send several fields in a single SMS message (with a maximum of 150 characters), simply repeating point 3. and 4. of the previous format for each couple field+value is required to set.

For example, send to the system the following SMS: **1111!2100!**

which means sending the following information **PASSWORD (1111) + (!) + FIELD (210) + VALUE (0) +(!)**

which **instructs DIAL-103A to program the following field: 210 with value 0**

For example, send to the system **1111!2100!5001!50539335123456!506393359876543!2151!**

This **instructs DIAL-103A to program the following fields:**

210	**with value**	**0**
500	**with value**	**1**
505	**with value**	**39335123456**
506	**with value**	**393359876543**
215	**with value**	**1**

Since the programming SMS message may not be received immediately (it depends exclusively on the mobile telephone operator), as soon as DIAL-103A receives the programming SMS message and correctly executes it, it will send a confirmation message to the user containing a summary of the programming message received.

For example, the SMS message confirming the previous command would be:

"1111!2100!5001!50539335123456!506393359876543!2151!"

By simply checking these values, the operator will be confident of what has been programmed.
In addition, there are two special commands to be introduced in SMS programming:

"ENTER NUMBER IN THE CLI LIST" and **"*DELETE NUMBER FROM THE CLI LIST"***

These are especially useful for managing the entry/removal of numbers from the CLI list without having to worry about the list position (fields 505-554) of the number to be added or removed.

To entry a new number: use the ">" operator
To remove a number: use the "<" operator

For example, send the system the following SMS: 1111!**>**39335123456!"

which **instructs DIAL-103A to program entry the new number 39 335 123456**

It is possible to add and remove several numbers in the same SMS. See the following example.

"1111!>39335123456!>393359876543!<39335112233!"

The numbers 39335123456 and 393359876543 will be added to the list and 39335112233 removed.

8.5. Restoring default parameters

It is possible, **through local line programming**, to reset ALL the entered data into the device memory to factory default (see the tables parameters for the default values). To clear the memory and reset the device with the factory settings you must follow this procedure:

- Connect an analog telephone directly to the "Line" connector or reach the PBX analog trunk where DIAL-103A is connected
- Dial ### and after the confirmation tone type ****8 ##8 **8** (asterisks and pounds with “8” digit)
- Wait for the confirmation tone for the effective recovery of all default parameters.

Otherwise, knowing the programming password and the number of the inserted SIM, send to the module the following SMS message:

“ **1111!?!** ” where “ 1111 “ is the password and the symbols “ **!?!** ” are the command to carry out the restore of the original factory parameters.

8.6. Parameter Table

The following table summarizes the programming commands.

Note: in the “Field Number” column, the three-digits parameter code is followed by the # (pound key), to remind the users to always confirm the device that the data just entered is correct.

Note: Use the column to fill-in your settings, writing the values entered in the device you are programming.

Field Number	Parameter Name	Description *Range = possibile values*	Default	Field max length (digits)	Enter Your Settings
200 #	Password for programming the parameters	This is the password to enter for accessing the programming function. It is not possible to clear this field; this password must exist. *Range: max 6 digits*	1111	6	
210 #	Ring type	Signals inbound calls. 0 = Fast Ring 1 = Phone Company 2 = depending on the CLI function table *Range: from 0 to 2*	1	1	
215 #	Accepts inbound GSM calls	Defines whether or not to accept any inbound calls. 0= calls are rejected 1= calls are accepted (a ring is generated) *Range: from 0 to 1*	1	1	
220 #	Interdigit timeout for dialing (in milliseconds)	Delay for reading digits on analog line, detect the number and redial it on GSM *Range: from 0 to 65535*	4000	5	
221 #	Delay for dialing first digit (milliseconds)	Maximum time allowed for dialing before DIAL-103A emits a not-available tone. *Range: from 0 to 65535*	30000	5	
235 #	Max. outbound conversation time before cut-off (in seconds)	Timeout for single outbound conversation. *Range: from 0 to 65535*	36000 (10h)	5	
240 #	DTMF code to recharge conversation time	Code for recharging timeout per single conversation. *Range: max 3 digits*	*1	3	
245 #	Conversation time recharge (in seconds)	Max. recharge time per single conversation. *Range: from 0 to 65535*	300 (5 min)	5	
250 #	Inhibited number 1	Enter number or area code to be inhibited (outbound calls). *Range: max 15 digits*	-	15	
251 #	Inhibited number 2	As above.	-	15	
252 #	Inhibited number 3	As above.	-	15	

Field Number	Parameter Name	Description *Range = possibile values*	Default	Field max length (digits)	Enter Your Settings
253 #	Inhibited number 4	As above.	-	15	
254 #	Inhibited number 5	As above.	-	15	
255 #	Inhibited number 6	As above.	-	15	
256 #	Inhibited number 7	As above.	-	15	
257 #	Inhibited number 8	As above.	-	15	
258 #	Inhibited number 9	As above.	-	15	
259 #	Inhibited number 10	As above.	-	15	
260 #	To send SIM CLI	Send your own CLI 0 = do not send it 1 = send it *Range: from 0 to 1*	0	1	
265 #	RX voice level	GSM module reception volume *Range: from 0 to 9*	5	1	
266 #	TX voice level	GSM module transmission volume *Range: from 0 to 9*	5	1	
270 #	Time before automatic response to inbound call (in seconds)	Waiting time before automatic response in view of programming Range: from 0 to 65535	30	5	
271 #	Max number of dialing digits	You can determine how many digits DIAL-103A will use to generate a call without waiting for the interdigit time-out (field 220). Attention: longer numbers will be truncated. *Range: from 0 to 99*	-	2	
272 #	Enables detection of decadic (pulse) dialing	For old PBXs with decadic (pulse) dialing on outside line trunk. 0 = DTMF only 1 = DTMF + DECADIC (PULSE) *Range: from 0 to 1*	0	1	
280 #	Unwanted caller 1	Blocks unwanted users. These numbers are rejected when they call the GSM module. *Range: max 15 digits*	-	15	
281 #	Unwanted caller 2	As above.	-	15	
282 #	Unwanted caller 3	As above.	-	15	
283 #	Unwanted caller 4	As above.	-	15	
284 #	Unwanted caller 5	As above.	-	15	
285 #	Unwanted caller 6	As above.	-	15	
286 #	Unwanted caller 7	As above.	-	15	
287 #	Unwanted caller 8	As above.	-	15	
288 #	Unwanted caller 9	As above.	-	15	
289 #	Unwanted caller 10	As above.	-	15	
290 #	Not used	Not to be used.	0	1	
291 #	Ring frequency	To set the ring signal frequency value 0 = set to 25 Hz 1 = set to 50 Hz *Range: 0,1*	0	1	
292 #	Roaming Enable	Allow or deny the DIAL-103A roaming registration to the GSM network. 0= Roaming disabled 1= Roaming enabled *Range: from 0 to 1*	1	1	
505 #	CLI table num. 1	Telephone number table position *Range: max 15 digits*	-	15	
506 #	CLI table num. 2	As above.	-	15	
507 #	CLI table num. 3	As above.	-	15	
508 #	CLI table num. 4	As above.	-	15	
509 #	CLI table num. 5	As above.	-	15	
510 #	CLI table num. 6	As above.	-	15	
511 #	CLI table num. 7	As above.	-	15	
512 #	CLI table num. 8	As above.	-	15	
513 #	CLI table num. 9	As above.	-	15	
514 #	CLI table num. 10	As above.	-	15	
515 #	CLI table num. 11	As above.	-	15	
516 #	CLI table num. 12	As above.	-	15	

Field Number	Parameter Name	Description *Range = possibile values*	Default	Field max length (digits)	Enter Your Settings
517 #	CLI table num. 13	As above.	-	15	
518 #	CLI table num. 14	As above.	-	15	
519 #	CLI table num. 15	As above.	-	15	
520 #	CLI table num. 16	As above.	-	15	
521 #	CLI table num. 17	As above.	-	15	
522 #	CLI table num. 18	As above.	-	15	
523 #	CLI table num. 19	As above.	-	15	
524 #	CLI table num. 20	As above.	-	15	
525 #	CLI table num. 21	As above.	-	15	
526 #	CLI table num. 22	As above.	-	15	
527 #	CLI table num. 23	As above.	-	15	
528 #	CLI table num. 24	As above.	-	15	
529 #	CLI table num. 25	As above.	-	15	
530 #	CLI table num. 26	As above.	-	15	
531 #	CLI table num. 27	As above.	-	15	
532 #	CLI table num. 28	As above.	-	15	
533 #	CLI table num. 29	As above.	-	15	
534 #	CLI table num. 30	As above.	-	15	
535 #	CLI table num. 31	As above.	-	15	
536 #	CLI table num. 32	As above.	-	15	
537 #	CLI table num. 33	As above.	-	15	
538 #	CLI table num. 34	As above.	-	15	
539 #	CLI table num. 35	As above.	-	15	
540 #	CLI table num. 36	As above.	-	15	
541 #	CLI table num. 37	As above.	-	15	
542 #	CLI table num. 38	As above.	-	15	
543 #	CLI table num. 39	As above.	-	15	
544 #	CLI table num. 40	As above.	-	15	
545 #	CLI table num. 41	As above.	-	15	
546 #	CLI table num. 42	As above.	-	15	
547 #	CLI table num. 43	As above.	-	15	
548 #	CLI table num. 44	As above.	-	15	
549 #	CLI table num. 45	As above.	-	15	
550 #	CLI table num. 46	As above.	-	15	
551 #	CLI table num. 47	As above.	-	15	
552 #	CLI table num. 48	As above.	-	15	
553 #	CLI table num. 49	As above.	-	15	
554 #	CLI table num. 50	As above.	-	15	

APPENDICES

A1 - ECHO CANCELLATION

Please modify only in case the effect experienced during normal use is continuous and systematic, as echo may randomly happen depending on GSM link conditions.

Note: for information regarding how to set DIAL-103A operative parameters, refer to section of parameters programming.

Note: after setting at least one of the followings parameters, switch off and on DIAL-103A in order to let the changes have effect.

Note: please contact TEMA technical staff if the echo cancellation doesn't work also after you have enabled the function with the "020" parameter.

Field Number	Parameter Name	Description *Range = possibile values*	Default	Field max length (digits)	Enter Your Settings
020 #	Enable/Disable the echo cancellation algorithm	This parameter allows to enable or disable the algorithm for echo cancellation. 0 = echo suppressor disabled 1 = echo suppressor enabled *Range: 0,1*	0	1	